

**FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST 5073
CRYSTAL MOUNTAIN, INC.**

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INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. ST 5073. The Department of Ecology (Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law [Revised Code of Washington (RCW) 90.48.080 and 90.48.162] requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the State include procedures for issuing permits [Chapter 173-216 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Southwest Regional Office of the Washington State Department of Health and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments

<u>GENERAL INFORMATION</u>	
Applicant	Crystal Mountain, Inc.
Facility Name and Address	Crystal Mountain, Inc. 33728 Crystal Mountain Boulevard, Crystal Mountain, WA 98022
Type of Treatment System	Extended aeration activated sludge with subsurface disposal in a drainfield
Discharge Location	Latitude: 46° 56' 25" N Longitude: 121° 28' 27" W.
Contact at Facility	Name: Bill Steel, Group II Operator Telephone #: (360) 663-3083
Responsible Official	Name: Bill Steel, Director of Planning and Facilities Crystal Mountain Resort, 33914 Crystal Mountain Blvd Crystal Mountain, WA 98022 Telephone #: (360) 663-3006 FAX # (360) 663-3001

BACKGROUND INFORMATION

DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM

Crystal Mountain Resort includes a ski facility and associated support, lodging, vacation homes and ski clubs. Crystal Mountain is located northeast of Mount Rainier National Park in Pierce County and is on U.S. Forest Service (USFS) land. The past and present development has occurred under a USFS special use permit covering approximately 4,350 acres. The main drainage running through the base area and passing close to the wastewater discharge area is Silver Creek which is tributary to the White River and then the Puyallup River. Access to this area is via State Route 410 to Crystal Mountain Boulevard.

HISTORY

The Crystal Mountain Resort and associated ski clubs are served by one main centralized wastewater system and a collection of several on-site septic systems. This permit concerns the main centralized system which currently serves the resort base lodge, Crystal Mountain office, grocery, chapel, ticket office, one condominium, one motel, and maintenance shops. This main system consists of an old extended aeration system housed in two buildings. The effluent discharges to a large drainfield that is located under the main parking lot (lot B). This main system was originally built in 1964. Parts of the system have been upgraded over the years. However, the system is aging and plans are to replace the treatment plant as guided by an April 2000 Revised General Sewer and Facilities Plan.

The Resort conducted an Environmental Impact Statement for a Master Development Plan to expand the resort in 1998. The Forest Service has yet to approve the EIS which has held up Crystal Mountain from upgrading their sewage treatment plant.

This fact sheet will discuss the proposed alternative for upgrading the system, however, the permit will only cover the existing system--It may be several more years before the EIS is approved by the U.S. Forest Service. The extent of that EIS approval will govern how much sewage treatment capacity will be needed. In 1977, the Crystal Mountain Sewer District (CMSD) formed to oversee wastewater facilities for the community associated with the Crystal Mountain ski area. The CMSD does not own or operate any of the wastewater facilities at Crystal Mountain.

Several sewage treatment plant evaluations have taken place over the years:

In 1977 there was an Amended Facility Plan which included an Inflow/Infiltration analysis and found problems with the treatment plant exceeding peak flows. This plan also found some failing septic systems.

In 1983 a Preliminary Feasibility Report was issued for upgrading the wastewater facilities. This report recommended forest spray irrigation and discharge to existing and expanded drainfields as the preferred discharge method. This was never implemented.

In 1988 a report evaluated the facility capacity.

In August 1998 a General Sewer and Facility Plan was issued which examined several alternatives for facility replacement. At that time the Crystal Mountain Ski Area was pursuing treating the wastewater to reclaimed water standards with an oxidation ditch to replace the old system and using the reclaimed water to make snow.

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In April 2000 the General Sewer and Facility Plan was revised. The ski area was still pursuing reclaimed water to make snow but had changed the initial treatment system to sequencing batch reactors (SBRs). The drainfield was still to be used as backup and off season disposal.

Since the April 2000 revision was issued, the reclaimed water and snow making proposal has been dropped due to opposition from the Muckleshoot Tribe. A Total Maximum Daily Load (TMDL) study is being conducted on the White River to deal with low dissolved oxygen. The affected TMDL reach is approximately 60 miles down stream from Crystal Mountain. As a result of the current TMDL discussions, the ski area will be restricted to waste loads that are the same or less than existing loads from the treated effluent and all septic systems. The recommended approach is subsurface disposal and full sewerage of those systems within the lower basin. The Resort may pursue other alternatives for wastewater treatment other than SBRs such as Membrane Bioreactors (MBRs). However, the General Sewer Plan would need to be revised again.

COLLECTION SYSTEM STATUS

The current collection system is connected to the following:

- resort base lodge,
- Crystal Mountain office,
- grocery,
- chapel,
- ticket office,
- one condominium, one motel, and
- maintenance shops.

There are several buildings that are served by individual on-site septic systems. The septic systems and buildings served by them include:

- Employee housing has 14 septic systems on the west side of Crystal Mountain Boulevard;
- Ski clubs have ten septic systems on the east side of Crystal Mountain Boulevard;
- Alpine Inn, located southwest of the WWTP, has an individual septic system, which, if need be, by opening a valve can tie into the main system;
- The Crystal Inn, Crown Point, Norse Peak lodges have one septic system that is located on the east side of Crystal Mountain Boulevard;
- Black Tusk and the pool facility have a septic system located on the southeast side of Lot B;
- The Summit House restaurant has a septic system that is located at the top of the Rainier Express chair approximately 1.5 miles west of the treatment plant;
- The Gold Hills Community has 26 developed lots with the potential for eight future connections. The community uses one centralized septic system located approximately 1/3 of a mile south of any existing connection to the main plant.

There are no plans to connect the Summit House septic systems to the main sewage treatment works due to the isolation of this system. All of the other systems are planned to be connected to the main sewage treatment works at some time in the future.

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The collection system serving the existing system is old and has infiltration and inflow (I/I) problems, especially in the spring when the snow melts. The entire collection system is to be replaced when the system is upgraded. This replacement, unfortunately, may not occur in the life of permit. Because the system is comprised of several private entities besides just the Crystal Mountain Resort, the Crystal Mountain Sewer District will need to be involved in funding and planning in the next several years for this replacement.

TREATMENT PROCESSES

The wastewater treatment plant was installed in 1964. Influent enters the plant by gravity from the existing connections mentioned above and passes a manually cleaned bar screen. The flow continues on to a manually cleaned fine bar screen and a trapezoidal flume for measuring flow. The flow at this point can enter an equalization primary sedimentation tank during high flows or by-pass the tank and go directly to the main aeration tank during low flows. Because there is a large seasonal fluctuation in flow, the process changes from the low season to the height of the ski season by by-passing the equalization tank during the low season. Flow then enters the aeration tank followed by a 16 foot diameter clarifier. There is a return activated sludge line and a waste activated sludge line and storage tank. Wasted sludge is hauled off-site approximately once per week. The flow is metered again after the clarifier and sent to a series of dosing chambers which distribute the effluent to six drainfields.

DRAINFIELD SYSTEM

The drainfield is comprised of six separate fields located several feet below the surface of parking lot B. Three of the drainfields are gravel filled trenches that receive effluent by gravity flow. Three of the drainfields are sand lined beds that receive effluent by pressure distribution.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the clarifier, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local transfer station. Solids removed from the clarifier are stored in a concrete tank that has no aeration. The waste is hauled off approximately once per week. The solids removed from the clarifier are hauled-off to be treated and land applied at a permitted beneficial use facility.

GROUND WATER

The site hydrogeology was characterized with monitoring wells and test pits (Landau, 2003). Much of the hydrologic examination looked at future expansion which would use parking lots D, E, F, and H as well as lot B. The existing system drainfield is located in lot B (see maps of Lot B and Detailed Site Plan in Appendix C).

Parking Lot B is about 1,300 feet long and 350 feet wide with Silver Creek forming the western and northern boundary. The southern uphill end rises steeply with bedrock outcrops. The existing sewage treatment plant is located just south of Lot B. The east side of Lot B is bound by a steep rise of about 20 ft to Crystal Mountain Boulevard. The geology under Lot B consists of a sequence of unconsolidated sedimentary deposits overlying bedrock. The unconsolidated deposits are typically well graded and coarse grained with varying silt content and are at least 10 feet thick. The deposits in the center of the lot were greater than 20-26 feet thick and greater than 15 feet thick at the north end of the lot. The deposits thinned to the south and were only 2 feet thick at borings B-B1 and B-B2. At Lot B the water table was generally at least 10 feet below ground surface during the high groundwater periods (late spring). The

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shallow aquifer beneath Lot B consists of saturated unconsolidated deposits with recharge coming from precipitation, surface water and near-surface water run-off. The aquifer discharge is primarily to Silver Creek. The depth to ground water ranged from about 12 feet at MW-B3 to about 2.5 feet at MW-B1.

Ground water flows northward down the valley paralleling the Crystal Mountain Boulevard. The discharge to Silver Creek is likely at the north end of Lot B near the bridge where the creek flows under the road.

Landau (2003) reported further work on drainfield expansion to Lots C, D, E, F, and H, however, this permit will only cover the existing system which is confined to the drainfield in Lot B.

PERMIT STATUS

The previous permit for this facility was issued on December 29, 1977. The original permit expiration date was December 29, 1982, however the permit has been extended several times until the present time. Applications for renewal of the permit were accepted by the Department.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection on August 13, 2003. The facility appeared to be operating properly according the permit.

During the last three years, the Permittee has mostly remained in compliance based on Discharge Monitoring Reports (DMRs) and other reports submitted to the Department and inspections conducted by the Department. There were a couple of violation for exceedance of permitted flow and total suspended solids. It should be noted however, that the monitoring required under the old permit was very minimal and may not have provided adequate information for characterization. For example, the BOD and TSS were only sampled quarterly.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the discharge monitoring reports. The proposed wastewater discharge prior to infiltration or land application is characterized for the following parameters:

Table 1: Wastewater Characterization (November 2000 – October 2002)

<u>Parameter</u>	<u>Concentration</u>
Flow	0.0095 mgd Avg
	0.034 mgd (This flow was exceeded 5% of the time)
	0.036 mgd max
BOD	19.2 mg/L Avg
	95% Removal on Avg
TSS	13.3 mg/L Avg
	91% Removal on Avg
DO	5.4 mg/L Avg
pH	6.3 Avg min (2.4 min)
	7.4 Avg max (8.8 max)

The information in Table 1 above is based on the small amount of data available. The flow is measured continuously and there appears to be enough data to characterize flow for the system. The drainage field is the limiting factor during high flows. The drainfield capacity is 0.0335 mgd for the average day and 0.038 mgd for the peak day. The existing capacity of the sewage treatment plant is 0.046 mgd for the average daily flow and 0.093 mgd for the peak daily flow. The plant data show that the plant has operated within the design limits. The BOD and TSS data shows the plant operating within limits, however, this is based on 5-11 samples taken for BOD and TSS respectively over three years of operation. Dissolved Oxygen is not limited in the permit and appears to be normal for a sewage treatment plant of this type. The pH data has been very low (2.4 standard units) on occasion. This may be an artifact of un-maintained sampling equipment. More care should be taken to assure that actual low pH values are not discharged to the ground.

SEPA COMPLIANCE

The ski area appears to be complying with State Environmental Policy Act (SEPA) requirements by going through an extensive environmental impact statement and a general sewer and facilities plan.

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the state. The minimum requirements to demonstrate compliance with the AKART standard is derived from the *Water Reclamation and Reuse Standards*, the *Design Criteria for Municipal Wastewater Land Treatment*, and Chapter 173-221 WAC.

The permit also includes limitations on the quantity and quality of the wastewater applied to the drainfield that have been determined to protect the quality of the ground water. The approved Facilities Plan includes specific design criteria for this facility. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC).

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART:

The plant will have to meet certain limits before discharging to ground. These limits include:

	EFFLUENT LIMITATIONS	
Parameter	Average Monthly	Maximum Daily
Flow	0.0335 MGD	0.038 MGD
BOD ₅	30 mg/L, 8.4 lbs/day	45 mg/L, 12.6 lbs/d
TSS	30 mg/L, 8.4 lbs/day	45 mg/L, 12.6 lbs/d
pH	Shall not be outside the range 6.5 to 8.5	

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The flow limits are based on the limits of the drainfield. The wastewater plant has a higher flow capacity but is limited by the drainfield. The plant will need to function to technology based limits before discharging to ground. In the past, BOD and TSS were monitored quarterly at best. This permit will be requiring weekly monitoring during the ski season from December through March and once a month from April through November for BOD and TSS. Flow should be monitored continuously and pH should be monitored daily. Monitoring will be fully displayed in the permit.

The following technology-based mass limits for BOD and TSS were derived with the following equation.

The monthly design flow of drainfield (0.0335 mgd) x concentration limit (30 mg/L) x conversion factor (8.34) = mass limit 8.4 lbs/day.

The weekly average effluent mass loading for BOD and TSS is calculated as 1.5 x monthly loading = 12.6 lbs/day.

The point of compliance for the technology based limits will be the effluent prior to discharging to the distribution boxes.

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. The goal of the ground water quality standards is to maintain the highest quality of the State's ground waters and to protect existing and future beneficial uses of the ground water through the reduction or elimination of the discharge of contaminants to ground water [WAC 173-200-010(4)]. This goal is achieved by [GW Implementation Guidance, Abstract, page x]:

- Requiring that AKART (all known available and reasonable methods of prevention, control and treatment) be applied to any discharge;
- Application of the antidegradation policy of the ground water quality standards. This policy mandates protecting background water quality and preventing degradation of water quality which would harm a beneficial use or violate the ground water standards; and
- Establishing numeric and narrative criteria for the protection of human health and welfare in the ground water quality standards.

Numeric ground water criteria (maximum contaminate concentrations) are based on drinking water quality criteria. Applicable criteria concentrations are listed below:

Ground Water Quality Criteria

Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Total Coliform Bacteria	1 CFU/100mL
Sulfate	250 mg/L
Nitrate (as N)	10 mg/L
pH	6.5 to 8.5 standard units
Manganese	0.05 mg/L

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Total Iron	0.3 mg/L
Toxics	No toxics in toxic amounts

The intent of the ground water quality standards is to protect background water quality to the extent practical, rather than to allow degradation of ground water quality to the criteria. The procedures for estimating background water quality are contained in the Guidance Document for Implementing the Ground Water Standards (Ecology, 1996). Background water quality is defined as the 95 percent upper tolerance interval with a 95 percent confidence. **Note:** Refer to the "Implementation Guidance for the Ground Water Quality Standards," Publication # 96-02.

The Department has reviewed existing records and is unable to determine if background ground water quality is either higher or lower than the criteria given in Chapter 173-200 WAC; therefore, the Department will use the criteria expressed in the regulation in the proposed permit. The discharges authorized by this proposed permit are not expected to interfere with beneficial uses. The Permittee is required in Section S1 of the proposed permit to determine background concentrations in ground water. Site-specific Enforcement Limits will be established based on these background values for the next permit cycle.

The Permittee is required in section S2 of the proposed permit to collect background concentrations near the point of discharge. This information may result in a permit modification or limits in the next renewal.

COMPARISON OF LIMITATIONS WITH THE EXISTING PERMIT ISSUED DECEMBER 1977

Comparison of Previous and New Limits

Previous Limits from December 1977

Parameter	Existing Limits
Suspended Solids	20 mg/L monthly

Proposed New Limits (The new limits have two points of compliance: Effluent for the wastewater treatment plant and groundwater sampled at monitoring wells)

Wastewater Effluent Limits

Parameter	Average Monthly	Maximum Daily
Flow	0.0335 MGD	0.038 MGD
BOD ₅	30 mg/L, 8.4 lbs/day	45 mg/L, 12.6 lbs/d
TSS	30 mg/L, 8.4 lbs/day	45 mg/L, 12.6 lbs/d
pH	Shall not be outside the range 6.5 to 8.5	

Ground Water Limitations

Parameter	Interim Ground Water Enforcement Limit
Total Coliform	1 CFU/100mL
Total Nitrogen ¹	10 mg/L
TKN	10 mg/L

Nitrate	10 mg/L
Nitrite	10 mg/L
Ammonia-N	10 mg/L
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Iron	0.30 mg/L
Manganese	0.05 mg/L

¹Total Nitrogen=TKN +Nitrate+Nitrite

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

INFLUENT AND EFFLUENT MONITORING

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

GROUND WATER MONITORING

The monitoring of ground water at the site is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. The Department has determined that this discharge has a potential to pollute the ground water. Therefore the Permittee is required to evaluate the impacts on ground water quality. Monitoring of the ground water at the site boundaries and within the site is an integral component of such an evaluation.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110).

FACILITY LOADING

The design criteria for this treatment facility are taken from The Crystal Mountain revised General Sewer and Facilities Plan, April 2000 engineering report prepared by Montgomery Watson and are as follows:

Drainfield

Monthly average flow (max. month):	0.0335 mgd
Instantaneous peak flow:	0.038 mgd

Treatment Plant

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Monthly average flow (max. month): 0.046 mgd

Instantaneous peak flow: 0.093 mgd

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant (WAC 173-216-110[4]). The Permittee is required to submit an engineering report when the plant reaches 85 percent of its flow or loading capacity. For significant new discharges, the permit requires a new application and an engineering report (WAC 173-216-110[5]).

OPERATIONS AND MAINTENANCE

The proposed permit contains Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

When the new facilities are redesigned and built, a new O&M manual for the entire wastewater system will be required. The rebuilding of the facility will require a new permit.

RESIDUAL SOLIDS HANDLING

To prevent water pollution the Permittee is required in permit Condition S6 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503 and by the Department under Chapter 70.95J RCW and Chapter 173-208 WAC. The disposal of other solid waste is covered under the Statewide Biosolids Permit administered by the Department.

Requirements for monitoring sewage sludge and recordkeeping are included in this permit. This information will be used by the Department to develop or update local limits and is also required under 40 CFR 503.

PRETREATMENT

WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

Federal pretreatment requirements in 40 CFR 403 and Sections 307(b) and 308 of the Clean Water Act apply to this facility. Therefore notification to the Department is required when pretreatment prohibitions are violated and when new sources of commercial or industrial wastewater discharge are added to its system.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to submit written notice of significant increases in the amount or nature of discharges (typically new industrial discharges) into the sewer system tributary to the permitted facility.

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Condition G6 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G8 requires application for permit renewal 60 days prior to the expiration of the permit. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the state of Washington. The Department proposes that the permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Landau Associates, March 2003. Hydrogeologic Characterization Report Crystal Mountain Pierce County, Washington. Tacoma, WA. Project 647.

Faulkner, S.P., Patrick Jr., W.H., Gambrell, R.P., May-June, 1989. Field Techniques for Measuring Wetland Soil Parameters, Soil Science Society of America Journal, Vol. 53, No.3.

Montgomery Watson, April 2000. Patrick Burke lead Engineer. Crystal Mountain Revised General Sewer and Facilities Plan for Crystal Mountain Sewer District. Bellevue, WA. Project 1060109001

Washington State Department of Ecology, 1993. Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems, Ecology Publication # 93-36. 20 pp.

Washington State Department of Ecology and Department of Health, 1997. Water Reclamation and Reuse Standards, Ecology Publication # 97-23. 73 pp.

Washington State Department of Ecology.

Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

APPENDICES

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to issue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on July 13, 2003, and July 20, 2003 in the *Tacoma News Tribune* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on _____ in _____ to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Carey Cholski, Permit Administrator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775.

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30-day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within 30 days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone (360) 407-6554, or by writing to the address listed above.

This permit was written by Eric Schlorff.

APPENDIX B--GLOSSARY

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation--The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring--Uninterrupted, unless otherwise noted in the permit.

Distribution Uniformity--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Soil Scientist--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

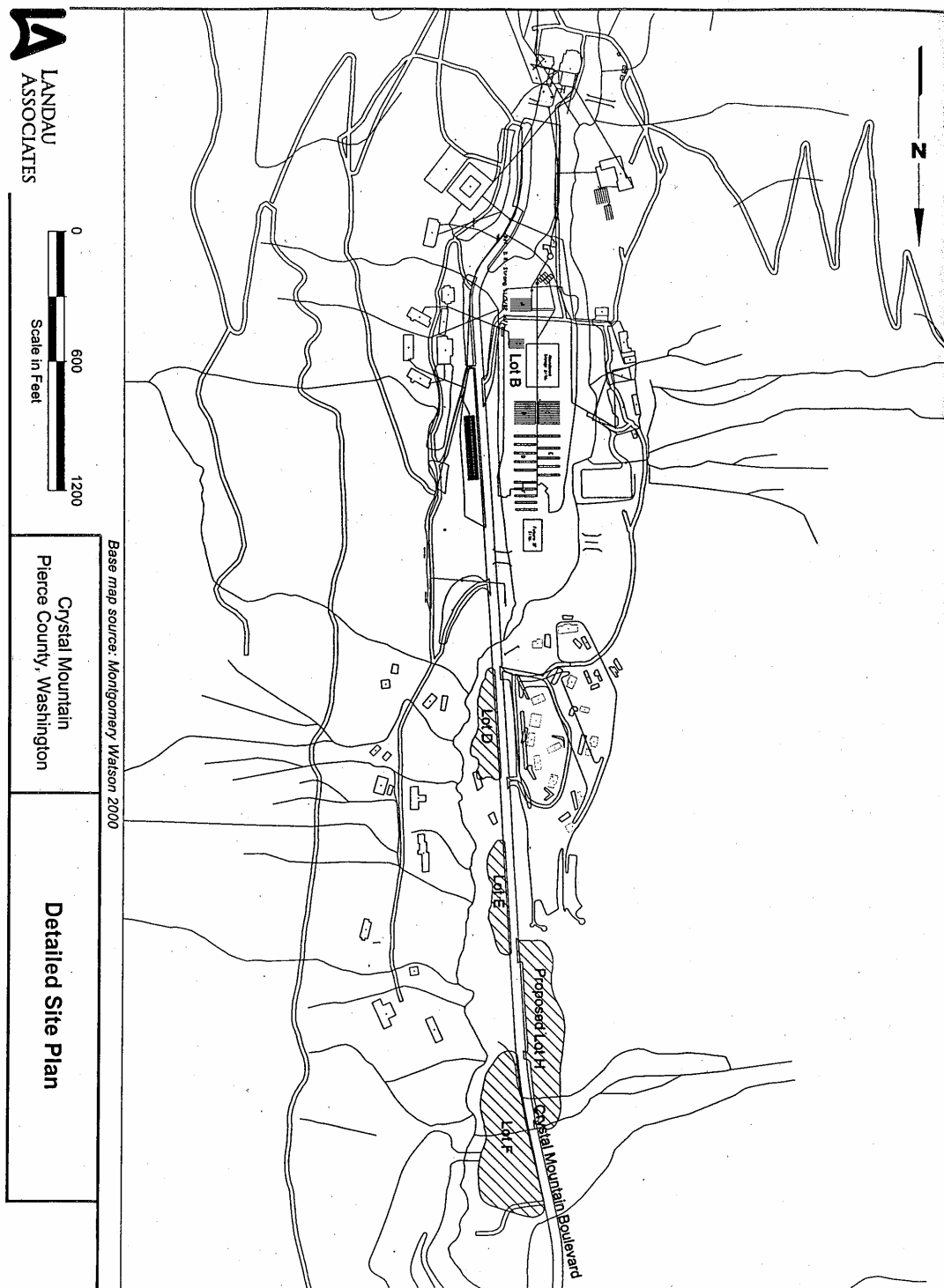
Total Coliform Bacteria--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

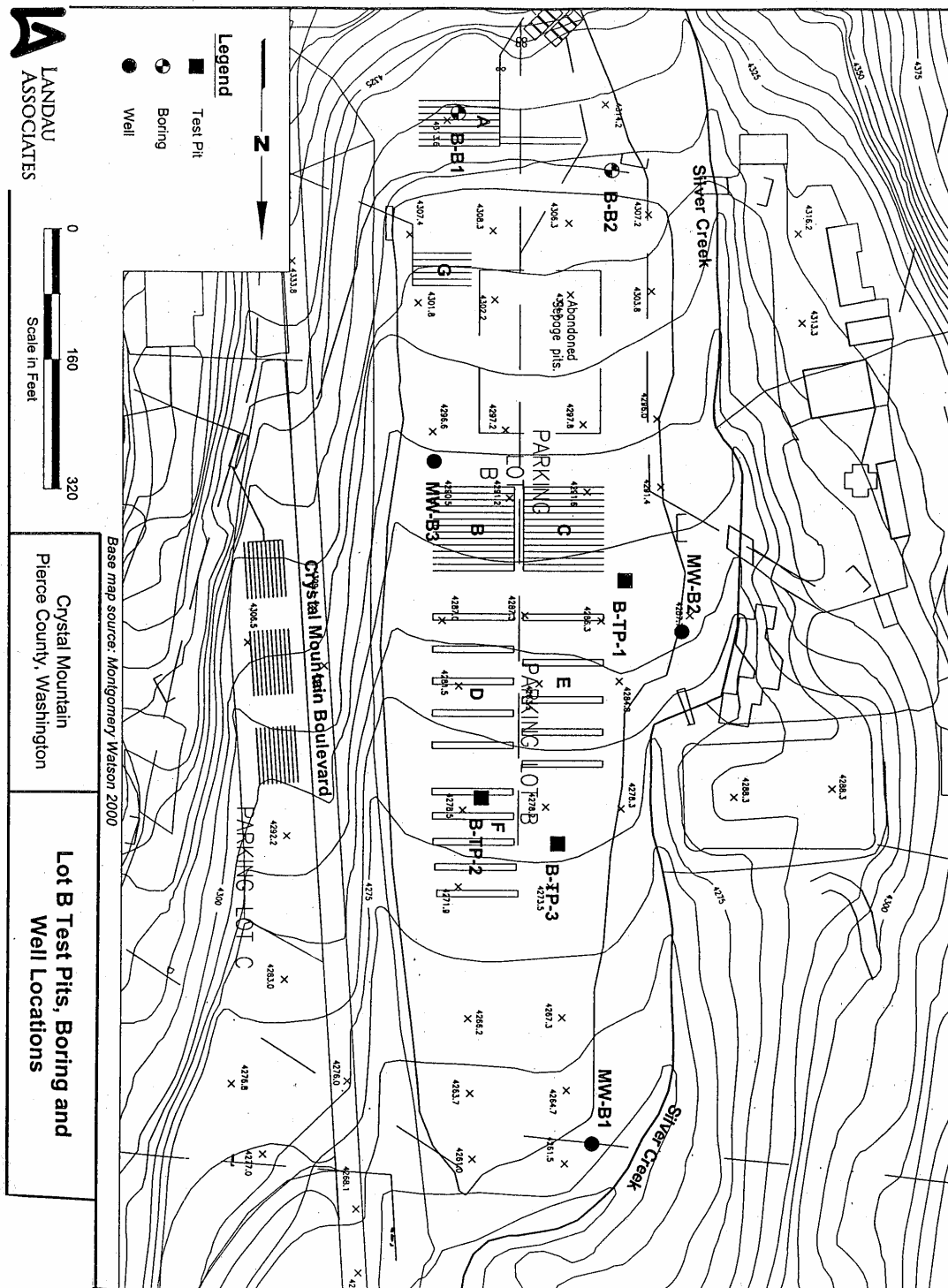
Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

APPENDIX C--TECHNICAL CALCULATIONS



FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST 5073
CRYSTAL MOUNTAIN, INC.



*FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST 5073
CRYSTAL MOUNTAIN, INC.*

APPENDIX D--RESPONSE TO COMMENTS